

NEW WORLD LIMNICHINAE I:
A REVISION OF THE GENUS *PHYSEMUS* LECONTE
(COLEOPTERA: LIMNICHIDAE)

DAVID P. WOOLDRIDGE

Department of Biology, Ogontz Campus,
The Pennsylvania State University, Abington, PA 19001

ABSTRACT

The taxonomic status of the genus *Physemus* is briefly discussed. Illustrations, a distribution map, and a key to separate the species are presented and the new species *P. punctatus* from Colombia, *P. latifrons* from Panama, and *P. excavatus* from Central America are described.

The genus *Physemus* consists of minute, apparently sub-aquatic species. Adults may be taken by throwing water over muddy banks of rivers and streams, or they may be found running actively over drying mud. They are most frequently taken at light. The larvae are unknown but are probably not truly aquatic. *Physemus* is most closely related to the Old World genus *Bothriophorus*, from which it differs by having a 2-segmented rather than 3-segmented antennal club.

Except for the more compact and fewer-segmented antennal clubs and their reception in lateral pronotal excavations in repose, and the somewhat larger than usual clypeus, *Physemus* and *Bothriophorus* closely resemble other members of the subfamily Limnichinae. These differences have been used to establish a separate subfamily, Bothriophorinae (Dalla Torre 1911, in cat.). However, the differences between *Physemus* and other members of the Limnichinae are no greater than differences between other genera in the subfamily. I therefore agree with Casey (1912) that, at best, tribal differences are reflected. I retain the tribe Bothriophorini, as proposed by Casey, for those species of Limnichinae with lateral cavities on the dorsal surface of the pronotum for receiving the antennae in repose.

ACKNOWLEDGEMENTS

The material used in this study was from the collections listed. I wish to thank the curators for making this material available to me. California Academy of Sciences, San Francisco (CAS), H. B. Leech and D. H. Kavanaugh; Illinois Natural History Survey, Urbana (INHS), M. W. Sanderson; Museum of Comparative Zoology, Cambridge (MCZ), J. F. Lawrence; Texas A&M University, College Station (TAM), H. R. Burke and J. C. Schaffner; and the U. S. National Museum (USNM), P. J. Spangler.

Genus *Physemus* LeConte

Physemus LeConte 1854:117; Casey 1889:160; Casey 1912:57.

Type-species: *Physemus minutus* LeConte, by monotypy.

Ditaphrus Casey 1886:250. Type species: *Ditaphrus scymnoides* Casey, by monotypy.

Size small, 0.85 to 1.2 mm. Broadly ovate, subacute posteriorly, covered with short, decumbent, easily eroded pubescence. Head retractible into prothorax; eyes subvertical, coarsely faceted, surmounted by cariniform ridge; epistoma separated from front by distinct suture; pubescent depression on each side in front of eye behind antennal insertion. Antennae 11-segmented, longer than head, free when head retracted; club 2-segmented, terminal segment large and oval. Pronotum with deep lateral pits on upper surface to receive distal parts of antennae in repose (Fig. 1, a); anterior margin narrowly polished. Elytra at base as wide as pronotum and continuing its outline. Median line of pronotum not impressed. Coxae all widely separated. Thoracic sternites and 1st visible abdominal sternite with deep grooves for reception of femora and tibiae in repose. Abdomen with 5 visible sternites.

The genus consists of 4 known species, all from the Western Hemisphere (Fig. 2).

KEY TO THE SPECIES OF *Physemus*

1. Mesosternal punctation fine along midline, at least some coarser punctures at sides and around mesocoxal cavities; elytral punctation various 2
- 1'. Mesosternal punctation even, fairly coarse throughout; elytral punctation very coarse, punctures widely separated. Colombia. *P. punctatus* n. sp.
- 2(1). Pubescent pits in front of eyes and above antennal insertions deep and well-marked, frons appearing constricted in front of eyes 3
- 2'. Pubescent pits in front of eyes and above antennal insertions shallow and barely depressed, frons appearing broad in front of eyes. Canal Zone *P. latifrons* n. sp.

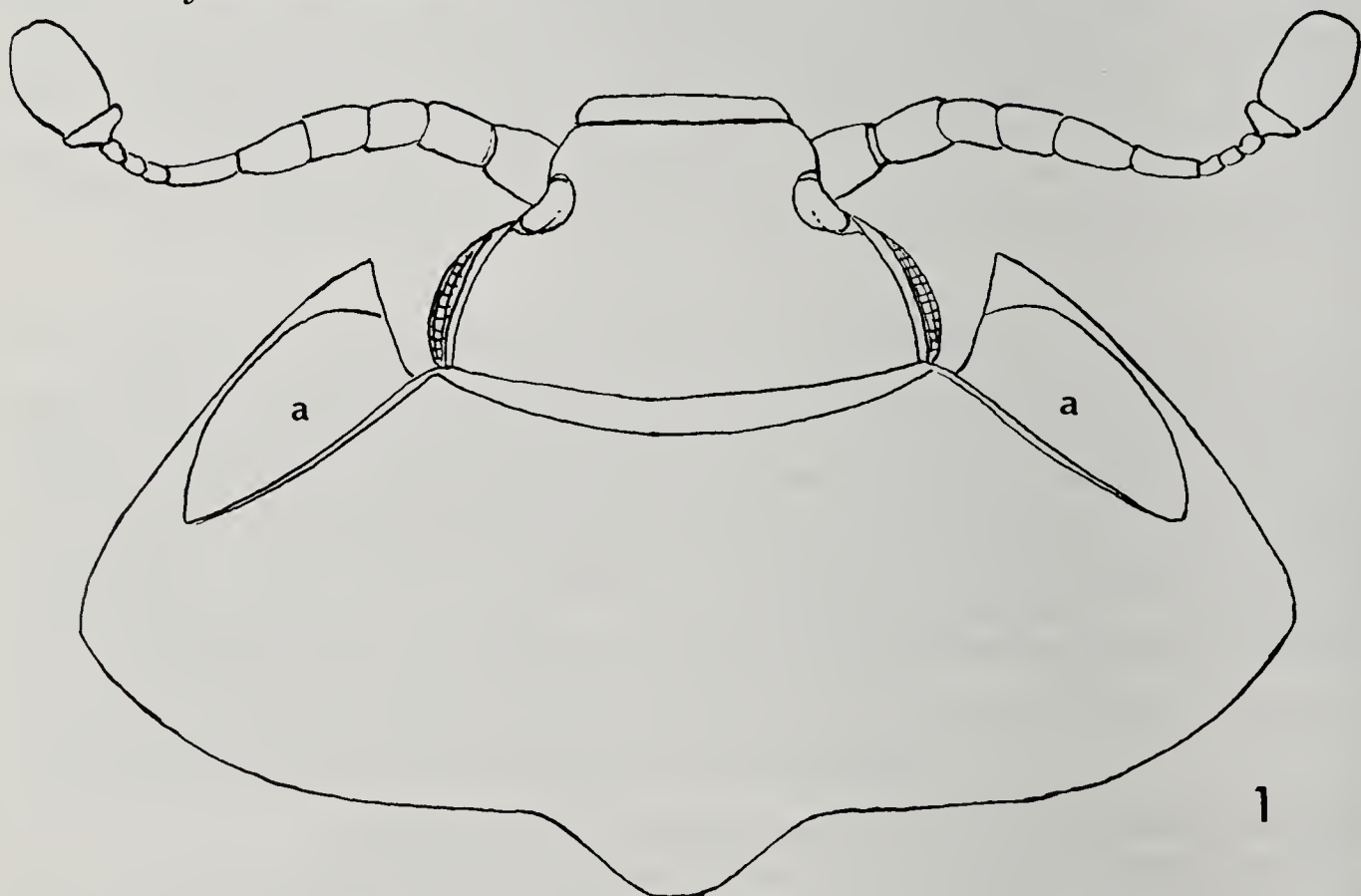


Fig. 1. Head and pronotum of *Physemus minutus*. Pronotal pits for reception of antennae are designated by "a". (Line = 0.20 mm).

- 3(2'). Second visible abdominal sternite with an irregular row of coarse punctures extending across center of sternite from side to side. Southwest United States and northern Mexico.....
 *P. minutus* LeConte
- 3'. Second visible abdominal sternite with numerous, irregularly scattered coarse punctures that become thicker at sides of sternite. El Salvador, Guatemala, and Honduras *P. excavatus* n. sp.

Physemus minutus LeConte 1854:117; Casey 1889:160-1; Casey 1912:58. Type locality: Colorado River, California. Type series located in MCZ, no holotype designated.

Ditaphrus scymnoides Casey 1886:250. Type locality: Texas. Type located in USNM.

Description: Male: Length 1.0 mm. Width 0.6 mm. Oval, acutely ogival posteriorly, convex. Head black; punctation coarse and close; pits on sides of head deep and well-marked; frons narrow between pits. Pronotum black; punctation fine on disk, coarser toward sides; narrowly glabrous at anterior margin. Elytra black, punctures coarse, fairly close (separated by 2 to 3 times diameter of each), becoming interspersed with finer punctures toward apex. Ventral surface dark red-brown. Maxillary and labial palpi dark red-brown. Antennae red-brown. Legs dark red-brown. Metasternal punctation fine along mid-line, becoming progressively coarser toward sides. Metacoxae coarsely punctate. Abdomen finely punctate, row of coarse punctures extending nearly from one lateral margin to other on 2nd to 4th visible sternites. Parameres of aedeagus long, flat, and slender, expanding inward just before the rounded tips. Penis narrowing from base to about midpoint, then narrowly parallel-sided to acute tip (Fig. 3).

Female: Externally identical to male, except lacking fine secondary punctation at apex of elytra. Genitalia as in Fig. 4.

Distribution: This species occurs from Texas to Southern California, into northern Mexico (Fig. 2).

Material Examined: (174 specimens): ARIZONA: no other data, [MCZ, USNM] (12); Ft. Yuma, 21-I to 8-IV, Hubbard and Schwarz [USNM] (22); Superior, 17-VII to 5-VIII-49, H. K. Gloyd, at light [INHS] (24); Superior, Boyce Thompson SW. Arboretum, 31-VII to 17-IX-49, B. W. Benson, at light [INHS] (8); Tucson, 21-IV to 21-IX, Hubbard and Schwarz [USNM] (4); Yuma, VIII, A. Fenyess Coll. [CAS] (1). CALIFORNIA: no other data [CAS, MCZ] (5) S. Dimas, 28-VII-91, Fall [CAS] (1); Los Angeles, Coquillett [USNM] (1); Pomona, 18-I-92, F. Blanchard Coll. [MCZ] (1); Yuma, 5 to 7-VII-33, Wickham [CAS, MCZ, USNM] (29) Yuma, 6-VIII, Liebeck Coll. [MCZ] (5); San Diego Co., 22-XI-90, F. E. Blaisdell [CAS] (1). TEXAS: Brownsville, Esper Rch, 1929 [USNM] (1), VI-29 [USNM] (1); Brownsville, VII-33, Wickham [USNM] (1); Brownsville, 30-IV to 3-V-04, H. S. Barber [USNM] (11); Eagle Pass, 30-III-08, Jones and Pratt [USNM] (1); El Paso, 1933, Wickham [USNM] (1); Gonzales Co., Palmetto St. Pk., 7-VI-69, Board and Hafernik [TAM] (28); San Antonio, 1933, Wickham [USNM] (1); San Patricio Co., Wilder Wildlife Refuge, 28-VI-69, Board and Hafernik [TAM] (13). MEXICO: *Sinaloa*: [USNM] (1).

In addition I have seen one specimen labelled Cape Sable, Florida, 5-IV-26, ex. stomach of *Passerherbulus mirabilis*. The locality must remain doubtful until other specimens are found in nature.

Physemus punctatus Wooldridge, **new species**

Holotype: Male. Pto. Colombia, Darlington. MCZ Type #32244. Length 1.1 mm. Width 0.75 mm. Broadly oval, convex. Head black; punctation fine and close; pubescent pits on sides behind antennal insertions deep and large, but frons not appearing constricted. Pronotum black; punctation sparse, somewhat finer than on elytra; pubescence sparse, yellow. Elytra black; punctures very coarse, widely separated (by 3 to 5 times diameter of each), some finer punctures toward apex; pubescence sparse, yellow. Ventral surface dark red-brown. Maxillary and labial palpi yellow-brown. Antennae yellow-brown, club darker. Legs red-brown. Metasternum evenly, fairly coarsely punctate, punctures not noticeably finer along midline. Mesocoxae evenly punctate, punctures about as on metasternum. Abdomen evenly, moderately finely punctate. Parameres of aedeagus wide, outer margins curving inward, inner margins straight, in repose held against the slender penis to give a solid, rounded tip (Fig. 5).

Allotype: Female. Same data as holotype. Externally identical to male, except lacking finer punctures toward apex of elytra. Genitalia as in Fig. 6.

Paratypes: 1 male, 1 female. Same data as holotype.

Distribution: Known only from type locality (Fig. 2) (Puerto Colombia, Atlántico, Colombia).

Physemus latifrons Wooldridge, **new species**

Holotype: Female. Panama, Canal Zone. Ancon, 12-V-11, arc light, A. H. Jennings. USNM Type #73399. Length 0.88 mm. Width 0.62 mm. Broadly oval, convex. Head black; punctation fine, even; pubescent pits on sides above antennal insertions shallow and rounded, frons broad between pits; covered with short, decumbent golden hairs. Pronotum dark red-brown; punctation fine, even; pubescence of short golden hairs; narrowly glabrous and polished around antennal pits. Elytra dark red-brown, paler toward



Fig. 2. Distributions of *Physemus* spp. Plus = *Physemus minutus*; open square = *P. excavatus*; solid square = *P. latifrons*; solid circle = *P. punctatus*.

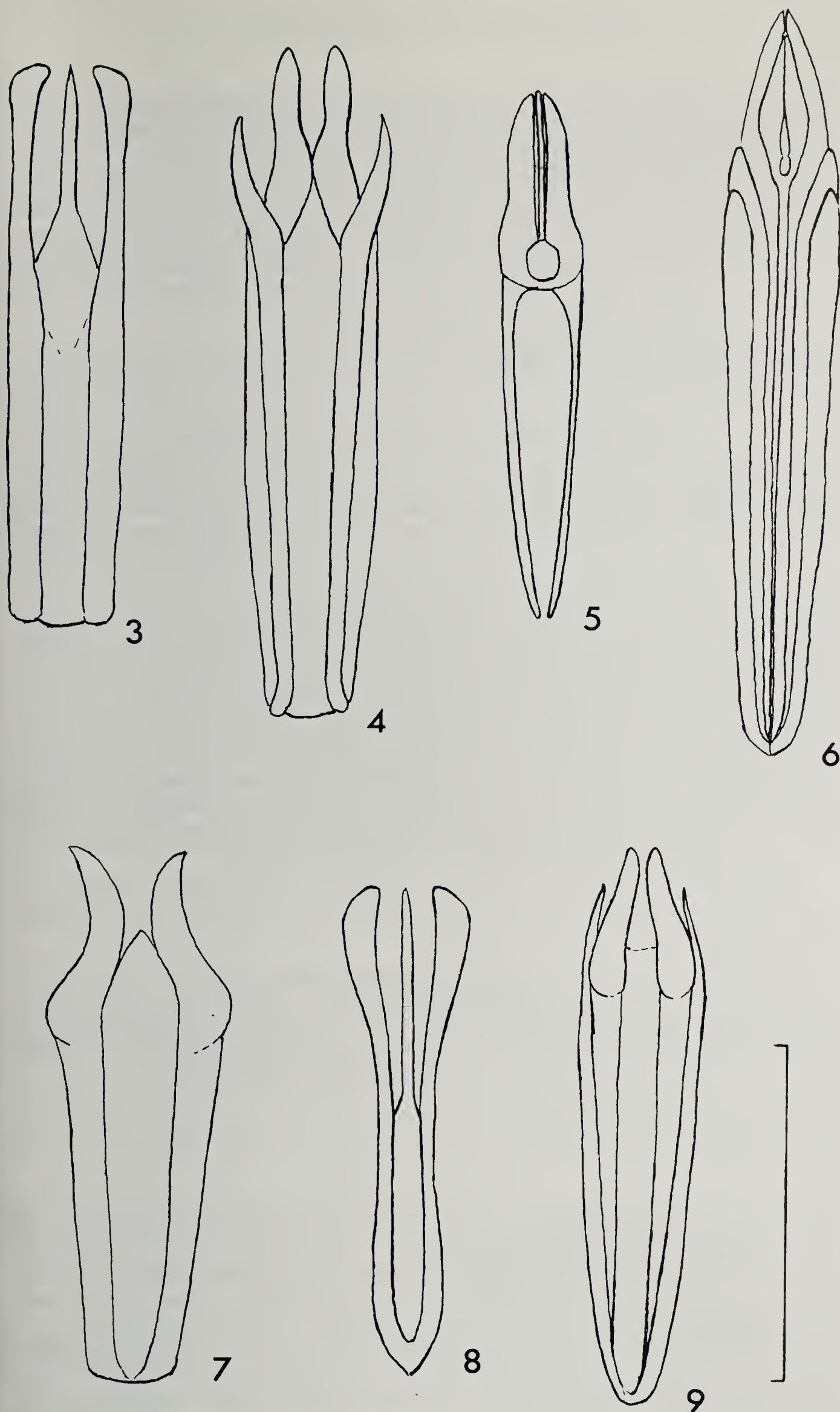


Fig. 3-9. Genitalia of *Physemus* spp: 3) male, *P. minutus*; 4) female, *P. minutus*; 5) male, *P. punctatus*; 6) female, *P. punctatus*; 7) female, *P. latifrons*; 8) male, *P. excavatus*; 9) female, *P. excavatus*. (Line = 0.20 mm).

apex; punctures fine, even, close (separated by 1 to 2 times diameter of each), somewhat coarser toward apex; pubescence of short decumbent golden hairs. Ventral surface light red-brown; abdominal sternites paler at sides, last segment darker in middle. Maxillary and labial palpi yellow. Antennae yellow, club red-brown. Legs yellow, except hind legs light red-brown. Metasternum very finely punctate, few slightly coarser punctures at sides and around mesocoxal cavities. Metacoxae very finely punctate. Abdomen evenly, finely punctate. Genitalia with coxites broad and strongly curved, convex sides directed inward (Fig. 7).

Paratype: 1 female. Same data as holotype.

Distribution: Known only from type locality (Fig. 2).

Physemus excavatus Wooldridge, **new species**

Holotype: Male. Honduras, 12 k. W. Olanchito, VI-22-1949, E. C. Becker. INHS. Length 1.0 mm. Width 0.75 mm. Broadly oval, convex. Head black; punctation fine, close; pits above antennal insertions very deep and broad; sides of frons forming shelf over antennal insertions; narrow between pits. Pronotum black; punctation fine on disk, coarser at sides, very close. Elytra black; punctures coarse, close (separated by 2 to 3 times diameter of each), coarser toward apex, but with some finer punctures interspersed. Ventral surface red-brown, abdomen dark red-brown along sutures. Maxillary and labial palpi red-brown. Antennae yellow, club red-brown. Legs red-brown. Metasternal punctation fine in center, very coarse at sides and near mesosternum. Metacoxae with series of deep coarse punctures. Abdomen opaque, coarsely, irregularly punctate. Parameres of aedeagus long and slender, widening slightly before the rounded tips. Penis narrowing abruptly at about half its length, then parallel-sided to the acute tip. Entire aedeagus strongly curved upward (Fig. 8).

Allotype: Female. Same data as holotype. Externally identical to male, except lacking secondary fine punctures near apex of elytra. Genitalia as in Fig. 9.

Paratypes: 2 males, 6 females. EL SALVADOR: 1 male, 1 female, Lk. Ilopango, VIII-2-1965, P. J. Spangler (USNM). GUATEMALA: 1 male, 2 females, Suchil, Fca. Lamaquina (22 km South) Rio Sis, 11 June 1966, O. S. Flint Jr. (USNM). HONDURAS: 2 females, same data as holotype. 1 female, same data as holotype, except Sept. 7, 1949 (INHS). (See Fig. 2).

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